

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/036,359

Q67825

AMENDMENTS TO THE DRAWINGS

Please replace the present Figure 2 with the attached, revised figure.

Attachment: Replacement Sheet

REMARKS

General Remarks

With this Amendment, Applicants cancel Claim 6 and add new Claims 36-64. Therefore, Claims 1-5 and 7-64 are currently pending in the present application. Claims 18-33 and 35 have been withdrawn. Therefore, Claims 1-5, 7-17, 34, and 36-64 are all the claims currently under consideration.

With the current Office Action, the Examiner has returned signed and initialed copies of the PTO-Forms 1449 filed with the April 25, 2002 and May 28, 2002 IDSs. The Examiner also acknowledges Applicants' claim to foreign priority and the receipt of the certified copy of the priority document.

Figures. Figure 2 stands objected to for containing an arrow which lacks a corresponding reference number. With this Amendment, Applicants amend Figure 2, as attached, to include the reference number "10" as suggested by the Examiner. Applicants submit that the figures are currently in proper form and respectfully request that the objection thereto be reconsidered and withdrawn.

Specification. The specification stands objected to due to informalities. With this Amendment, Applicants amend paragraphs 40 and 46, as shown, and as suggested by the Examiner. Applicants therefore respectfully request that the objections to the specification be reconsidered and withdrawn.

Objections to the Claims. Claim 6 stands objected to due to informalities. With this Amendment, Applicants cancel Claim 6. Claim 34 stands objected to as a substantial duplicate of

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Claim 8. With this Amendment, Applicants amend Claim 1 to include the limitations of original Claim 6. Claim 8 depends from Claim 1. Therefore, Applicants submit that Claim 34 is not currently a substantial duplicate of Claim 8 and respectfully request that the objection thereto be reconsidered and withdrawn.

§103 Rejections. The following rejections under 35 U.S.C. § 103(a) currently stand:

- Claims 1, 5, 12, 13, 16, and 17 over Libbey, GB-869,397 (“Libbey”) and Arnold et al., U.S. Patent No. 4,824,545 (“Arnold”);
 - Claims 2-5 and 13 over Libbey, Arnold, Yasushi et al., JP-07-207427 (“Yasushi”), and Masakazu, JP-03-287767 (“Masakazu”);
 - Claim 7 over Libbey, Arnold, Yasushi, Masakazu, and Hyodo et al., U.S. Patent No. 6,355,353 (“Hyodo”);
 - Claims 8-11 and 34 over Libbey, Arnold, Suzuki et al., U.S. Patent No. 5,911,856 (“Suzuki”), Sato et al., U.S. Patent No. 5,766,360 (“Sato”), Nashimoto, U.S. Patent No. 5,147,498 (“Nashimoto”), and Lewis et al., U.S. Patent No. 4,560,576 (“Lewis”);
 - Claims 14 and 15 over Libbey, Arnold, and Yoichiro et al., JP-03-179730 (“Yoichiro”);
- and
- Claims 1, 5, 8-11, and 34 over Lewis and Arnold.

Applicants respectfully traverse these rejections as discussed below.

New Claims 36-64

With this Amendment, Applicants add new Claims 36-64 in order to more fully cover various aspects of Applicants’ invention as disclosed in the specification. No new matter is added.

Claims 1-5, 7-17, and 36

With this Amendment, Applicants amend Claim 1 to incorporate therein the limitations of original Claim 6. Original Claim 6 stood rejected under §103 over the combination of Libbey,

Arnold, Suzuki, Sato, Nashimoto, and Lewis. Original Claims 2-5 and 7-17 depend from Claim 1, as currently amended. New Claim 36 depends from Claim 1, as currently amended.

Applicants submit that one of ordinary skill in the art at the time of the present invention would not have been motivated to combine all of Libbey, Arnold, Suzuki, Sato, Nashimoto, and Lewis as suggested by the Examiner, in order to arrive at Claim 1, as currently amended, including forming a multilayer coating and performing at least one treatment step inside the lock chamber between subsequent coating steps. Applicants submit that there is no suggestion or motivation for doing so in the references themselves or in the knowledge available to one of ordinary skill in the art without resorting to impermissible hindsight.

In order to obtain the recited limitations of Claim 1, as currently amended, the Examiner refers to Lewis and claims that one of ordinary skill in the art would have obtained the missing features from this document. No motivation to combine this teaching is provided.

Further, Applicants submit that the cited combination of references fails to teach or suggest at least depositing multiple coatings using at least two subsequent coating steps, as claimed, wherein at least one treatment step is performed inside a lock chamber between two subsequent coating steps.

The Examiner acknowledges that Libbey, Arnold, Suzuki, Sato, and Nashimoto fail to teach or suggest these limitations, and therefore, relies on Lewis to teach this limitation. (Office Action, p. 13). However, Applicants note that Lewis fails to teach or suggest a multilayer coating. Instead, the cited section of Lewis, col. 3, lns. 47-53, refers to a process where a *single layer* of ZnSe is grown on a substrate. Lewis describes that the process of depositing the single

layer can be interrupted any time to monitor the surface by Auger Electron Spectroscopy.

However, these teachings of Lewis fail to disclose or suggest a multilayer coating, and therefore fail to teach or suggest a method including depositing multiple coatings on an optical element, and between coating steps, transferring the optical element to a lock chamber and performing a treatment step, as recited.

Therefore, for at least the above reasons, Applicants submit that Claim 1, as currently amended, is patentable over a reasonable combination of the cited references and respectfully request that any rejections thereof be reconsidered and withdrawn.

Regarding Claims 2-5, 7-17, and 36, Applicants submit that these claims are patentable at least by virtue of their dependence on Claim 1, and respectfully request that any rejections thereof be reconsidered and withdrawn.

Claims 34 and 37-46

Claim 34 stands rejected under §103 over Libbey Arnold, Suzuki, Sato, and Nashimoto and also over Lewis and Arnold. New claims 37-46 depend from Claim 34.

Regarding the rejection of Claim 34 over the combination of Libbey, Arnold, Suzuki, Sato, and Nashimoto, Applicants submit that a reasonable combination of the cited references fails to teach or suggest a treatment step performed in a lock chamber, as claimed, comprising measuring at least one optical property of a coated optical element. The Examiner acknowledges that Libbey and Arnold fail to teach or suggest this limitation. (Office Action, p. 11).

Regarding the Suzuki reference, Suzuki describes a method of forming a multi-layer optical thin film in a film-forming chamber 3, which is connected to the external environment via

a load-lock chamber 2. (See Fig. 1). However, the apparatus 1 of Suzuki, for evaluating the optical characteristics of the finished, coated substrate, is arranged *outside* the load-lock chamber 2. Applicants respectfully submit that this teaches away from the present invention as recited in Claim 34, requiring that the measuring step be performed *inside* the lock chamber. In other words, although Suzuki teaches a load-lock chamber 2, the optical measurement of Suzuki is performed outside the chamber. Such a device and method, therefore, cannot teach or suggest performing the optical measurement inside a lock chamber as this would be contrary to the teaching of Suzuki.

Regarding the Sato reference, the Examiner notes that according to Sato, a substrate having a film deposited thereon is transferred from a coating chamber to another chamber where inspection occurs. However, Applicants note that the inspection chamber of Sato is not a lock chamber. Figure 1 of Sato illustrates a lock/unload chamber 10 which is attached to the inspection chamber 6. Therefore, Sato, like Suzuki, teaches away from performing optical measurement inside a lock chamber, as recited in Claim 34.

Regarding the Nashimoto reference, Applicants note that Nashimoto describes an apparatus for controlling temperature in the processing of a substrate, which is a semiconductor wafer. Nashimoto fails to teach or suggest measuring any optical properties of any optical elements, as recited in Claim 34.

Therefore, for at least the above reasons, Applicants submit that Claim 34 is patentable over a reasonable combination of Libbey, Arnold, Suzuki, Sato, and Nashimoto.

Regarding the rejection of Claim 34 over Lewis and Arnold, as discussed above, the Examiner acknowledges that Arnold fails to teach or suggest the claimed limitation of measuring optical properties of an optical element inside a lock chamber.

Regarding the Lewis reference, Applicants note that the lock chamber 1 of Lewis is not provided with means for measuring optical properties. Instead, a separate preparation chamber 2 is arranged between the lock chamber 1 and the growth chamber 3. The optical measurement to which the Examiner refers (col. 3, Ins. 1-29) is performed in the *preparation chamber* and not in the lock chamber. Applicants submit that this explicitly teaches away from the use of the lock chamber for measuring optical properties, as claimed. In this respect, Applicants submit that Lewis is similar to Sato, discussed above, in that while the two references each teach lock chambers, according to the references, optical inspection is performed outside the lock chambers, thereby teaching away from the present invention as recited in Claim 34.

Therefore, for at least the above reasons, Applicants submit that Claim 34 is patentable over a reasonable combination of Lewis and Arnold.

Applicants respectfully request that the §103 rejections of Claim 34 be reconsidered and withdrawn. Regarding Claims 37-46, Applicants submit that these claims are patentable at least by virtue of their dependence on Claim 34 and therefore respectfully request their allowance.

Claims 47-57

New Claim 47 incorporates the limitations of original Claims 1 and 7. New Claims 48-57 depend from new Claim 47. Original Claim 7 stood rejected under §103 over the combination of Libbey, Arnold, Yasushi, Masakazu, and Hyodo.

Regarding new Claim 47, Applicants submit that a reasonable combination of the above-cited references fails to teach or suggest a post-cleansing of an optical element, as claimed, performed in a lock chamber.

The Examiner acknowledges that the combination of Libbey, Arnold, Yasushi, and Masakazu fails to teach or suggest this limitation, therefore relying on Hyodo. (Office Action, p. 10). The Examiner refers to col. 1, lns. 5-17 and col. 5, lns. 48-50 of Hyodo as teaching this limitation. (Office Action, p. 10). The Examiner argues that the CVD/pyrolysis coating process of Hyodo is similar to the process of Libbey, but fails to explain why this is the case. (Office Action, p. 10). Additionally, while Hyodo describes that “after the film deposition, the glass is annealed in the Lehr 30 and then subjected to cleaning and cutting steps,” Hyodo provides no additional information regarding the cleaning step, and fails to teach or suggest a cleaning step that is performed in a lock chamber, as claimed. Further, because the Lehr 30 is not disposed in any kind of closed treatment chamber (see Fig. 2), Applicants submit that cleaning the glass article in a lock chamber after the annealing process is performed in the Lehr would not have been obvious from the teaching of Hyodo.

Therefore, for at least the above reasons, Applicants submit that new Claim 47 is patentable over the cited combination of references, that new Claims 48-57 are patentable at least by virtue of their dependence on new Claim 47, and respectfully request the allowance of Claims 47-57.

Claims 58-63

New Claim 58 incorporates the limitations of original Claims 1, 12, and 13. New Claims 59-63 depend from new Claim 58. Original Claim 13 stood rejected under §103 over the combination of Libbey, Arnold, Yasushi, and Masakazu.

Regarding new Claim 58, Applicants submit that a reasonable combination of the above-cited references fails to teach or suggest changing the temperature of the optical element, as claimed, with a controlled rate of temperature change. Regarding this limitation, the Examiner notes that Libbey teaches heating an article to a required temperature. (Office Action, p. 7). The Examiner acknowledges that Libbey fails to teach or suggest heating at a controlled rate, but asserts that it would have been obvious for one of skill in the art to do so because such a heating process would be superior. (Office Action, p. 7). However, the Examiner fails to cite any intrinsic or extrinsic evidence supporting this assertion. Therefore, Applicants submit that the only motivation for the Examiner's proposed modification is Applicants' own disclosure, the reliance on which constitutes impermissible hindsight reconstruction under MPEP §2143 (see also *In re Vaeck*, 20 USPQ 1438 (Fed. Cir. 1991)).

Therefore, for at least these reasons, Applicants submit that new Claim 58 is patentable over the cited combination of references and that new Claims 58-63 are patentable at least by virtue of their dependence on new Claim 58, and respectfully request the allowance of Claims 58-63.

Claim 64

New Claim 64 incorporates the limitations of original Claims 1, 6, 7, and 8. Applicants submit that new Claim 64 is patentable for at least the same reasons as discussed above with respect to Claims 1, 34, and 47 and respectfully request the allowance thereof.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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